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European Fossil Cetacea.—Prof. J. F. Brandt has published, in the memoirs of the Royal Academy of St. Petersburg, an elaborate quarto work on the fossil and sub-fossil Cetacea of Europe. It is illustrated with 34 plates.

ANTHROPOLOGY.

Restoration of Indian Pottery.—The caving of a bank of loamy earth on the east side of Connecticut River, about seven miles above Hartford, brought to light, several years ago, fragments of Indian pottery, which were found by a gentleman then temporarily residing at East Windsor Hill in that vicinity. They were composed of burnt clay intermingled with particles of pounded quartz, and as they evidently had a relation to one another, he commenced putting them together, using for that purpose slips of writing paper, about half an inch wide, and two inches long, coated with thick gum-arabic mucilage, and stuck on the inside of the pieces opposite the joints.

When I first saw his work he had reconstructed, from the pieces which he had found, about half of a kettle, the rim of which was entire, and about ten inches in diameter, and quite elaborately ornamented with lines grooved in the clay while it was in a plastic state. I was much interested in his work, for though I had frequently found fragments of that kind of pottery, I had never seen pieces of any one utensil sufficient in size or number to indicate the forms or dimensions of such ware. I went with him to the place of deposit, and we raked and sifted the soil thoroughly, and recovered additional fragments, from which we built up with the gummed slips, the entire form of the kettle, although there were in several places gaps which no shards were found to fill. It cost a deal of time and study to locate all the pieces, of which there were about seventy-five in number broken (it might almost be said) into every shape and size into which crockery could be broken. The labor was like that of putting together a dissected map, *very dissected;* or like that of solving all the figures of a book of Chinese puzzles laid together in one grand design.

The gummed slips answered the purpose of their designer admirably. Had he interposed between the shards any kind of cement, that would have prevented strict contiguity, or that would have set them immovably in their places as they were added one by one, it would have been impossible to go on without trimming pieces that would not otherwise enter their proper places. Every additional piece trimmed would have aggravated the errors of adjustment, and the original form of the kettle would have been lost. But the paper slips, pasted and interlaced only on the inside of the work, allowed close adjustment of joints. They were also flexible, and capable of removal at any point by wetting if the progress of the work demanded. The fragments were pretty uniformly one-quarter of an inch in thickness, and it was sometimes, though not often, necessary to shore them up with props until the slips were sufficiently dry to hold them. The kettle was rebuilt resting on its rim, mouth downward, and in that position the fragility of the reconstruction made it necessary to keep it. The form developed was egg-shaped, the small end of the egg representing the bottom of the kettle, and the large end opening into a short, wide neck, which flared into a bell-shaped rim. The ornamental grooving was principally on the neck and rim; though the whole remaining exterior surface was chopped with short grooves intersecting at various angles. A cross section at any point did not vary very noticeably from a circle. The interior showed prints made by fingers in moulding and smoothing the plastic clay, and towards the bottom, the wear of subsequent use. The exterior of the bottom was somewhat darkened, as if by smoke; there was no glazing, and the general color was a dark brick red. The dimensions nearly were, height fourteen and one-fourth inches, diameter of rim nine and one-half inches, of neck eight and one-fourth inches, and of body eleven and one-half inches. Capacity about thirteen quarts, beer measure.

The first finder of the relic shortly transferred his residence to a foreign country, and his title to me. Wishing recently to take a drawing from this kettle, I found that atmospheric changes had caused most of the gummed slips to peel from the interior of the work so that it scarcely held together. Chaos might come again at any moment. As a first precaution I immediately made a quantity of duplicate numbers on little squares of paper, and gummed them on the outside opposite all the joints; then separated the work into nearly its original number of pieces, and rebuilt it with new slips, leaving a hole at the top (or bottom rather, as the kettle stood mouth downwards) large enough to see, and work upon, the interior.

After the body of the kettle had been brought into its true shape, the first step towards improvement was to make a not very thick solution of glue in water, and lay it with a small brush, into all the joints; avoiding spreading the glue beyond the joints as much as possible. This, on drying, set all the fragments in place quite firmly. The upper pieces around the hole, however, were not glued, but left supported by the gummed slips only for convenient insertion of the last pieces. Slips were next gummed on the inside across all gaps left by missing fragments. I then made a kind of cement, or mortar from pieces of very soft burned brick, pounded to dust, sifted, shaded to the color of the kettle with lamp-black, and moistened to a plastic state with not very thick glue water. With this mortar all the joints and gaps were filled on the outside. But the gaps were designedly not filled quite to the required thickness with one coat, as the mortar would shrink and crack somewhat in drying. Wherever these cracks appeared, glue was rubbed into them with the brush before laying on the final coat of cement. When this coat was dry it was smoothed with old files and sand paper and groove-marked in imitation of the unbroken surface. Protuberances in the cement too large to be readily filed down in a dry state, were first surface-softened by slight damping. The hole at the top was next underlaid with slips, and filled. Finally the slips were all removed from the interior by damping with a moist cloth, and any crevices that appeared were filled with cement.

From a basket full of nearly worthless shards was thus reconstructed a single relic, very rare (at least in Connecticut) whole and strong, showing no obvious breakage, as good as new for ethnological use, and as indestructible if not soaked with water, as any specimen of ceramic art.—E. W. Ellsworth, *East Windsor Hill, Ct.*

MICROSCOPY.

Beaded Silica Films.—Mr. Henry J. Slack has produced delicate films of silica, by mixing powdered glass, powdered fluor spar and sulphuric acid in a flask and conducting through a glass pipe the gas which escapes from the heated mixture into a dish containing glycerine and water. By contact with pure water the gaseous silica is deposited so suddenly and violently as to produce only amorphous particles, and a similar result is obtained